
Memecylon batekeanum, a New Species from Southeastern Gabon,
and a Note on the Circumscription of *Memecylon* Sect.
Mouririoidea (Melastomataceae)

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ABSTRACT. Described and illustrated is *Memecylon batekeanum* R. D. Stone & G. M. Walters from the buffer zone of the Batéké Plateaux National Park in southeastern Gabon. This new species is closely related to *M. amshoffiae* Jacques-Félix of Cameroon, but is distinguished by its shrubby habit, quadrangular-alate young branchlets, fewer-flowered inflorescences, and calyptrate calyx. A provisional IUCN status of Vulnerable is assigned. *Memecylon amshoffiae* was treated earlier in section *Mouririoidea* Jacques-Félix, but this is contraindicated by evidence from ovary and anther morphology and by recent molecular phylogenetic analyses. Together, *M. amshoffiae* and *M. batekeanum* are provisionally placed next to *M. diluviorum* Exell in section *Polyanthema* Engler.

RÉSUMÉ. Dans ce travail est décrit et illustré *Memecylon batekeanum* R. D. Stone & G. M. Walters du zone tampon du Parc National des Plateaux Batéké du Sud-est Gabon. Cette nouvelle espèce se rapproche de l'espèce Camerounaise *M. amshoffiae* Jacques-Félix, mais s'en distingue par sa forme d'arbrisseau, ses jeunes rameaux 4-angulaires-ailés, ses cymes peu fleuries, et son calice calyptriforme. Un statut préliminaire de Vulnérable est effectué selon les critères des Listes Rouges de l'UICN. Le traitement antérieure de *M. amshoffiae* dans la sect. *Mouririoidea* Jacques-Félix est contrindiqué par des preuves obtenues à partir des caractères morphologiques des ovaires et des anthères, ainsi que par des analyses moléculaires phylogénétiques. *Memecylon amshoffiae*

et *M. batekeanum* sont provisoirement placés tous les deux près de *M. diluviorum* Exell dans la sect. *Polyanthema* Engler.

Key words: Gabon, Melastomataceae, *Memecylon*, riverine forest, plant conservation.

Regarding the widespread paleotropical genus *Memecylon* L., our knowledge of its diversity in Africa and Madagascar has been greatly advanced by the work of H. Jacques-Félix. His detailed morphological and anatomical studies, along with those of K. Bremer, have led to the recognition of the segregate genera *Spathandra* Guillemin & Perrottet, *Lijndenia* Zollinger & Moritzi, and *Warneckea* Gilg (Jacques-Félix, 1978b; Bremer, 1982)—concepts that have received additional support from molecular phylogenetic analyses (Stone, 2006).

Within *Memecylon* s. str., Jacques-Félix (1978a, 1979) accounted for the western and central African taxa by recognizing section *Polyanthema* Engler (ca. 16 species) and by proposing two new sections, *Azeliana* Jacques-Félix (ca. 18 species) and *Mouririoidea* Jacques-Félix (5 species). The first two groups have unilocular ovaries and are diagnosed by the shape of the fruit (globose in sect. *Polyanthema* vs. ellipsoid to oblong in sect. *Azeliana*). Section *Mouririoidea* is characterized by a 4-loculed ovary and conspicuously 4-lobed calyx; it is an especially distinctive group in which Jacques-Félix (1978a, 1979, 1983a, b) placed *M. lateriflorum* (G. Don)

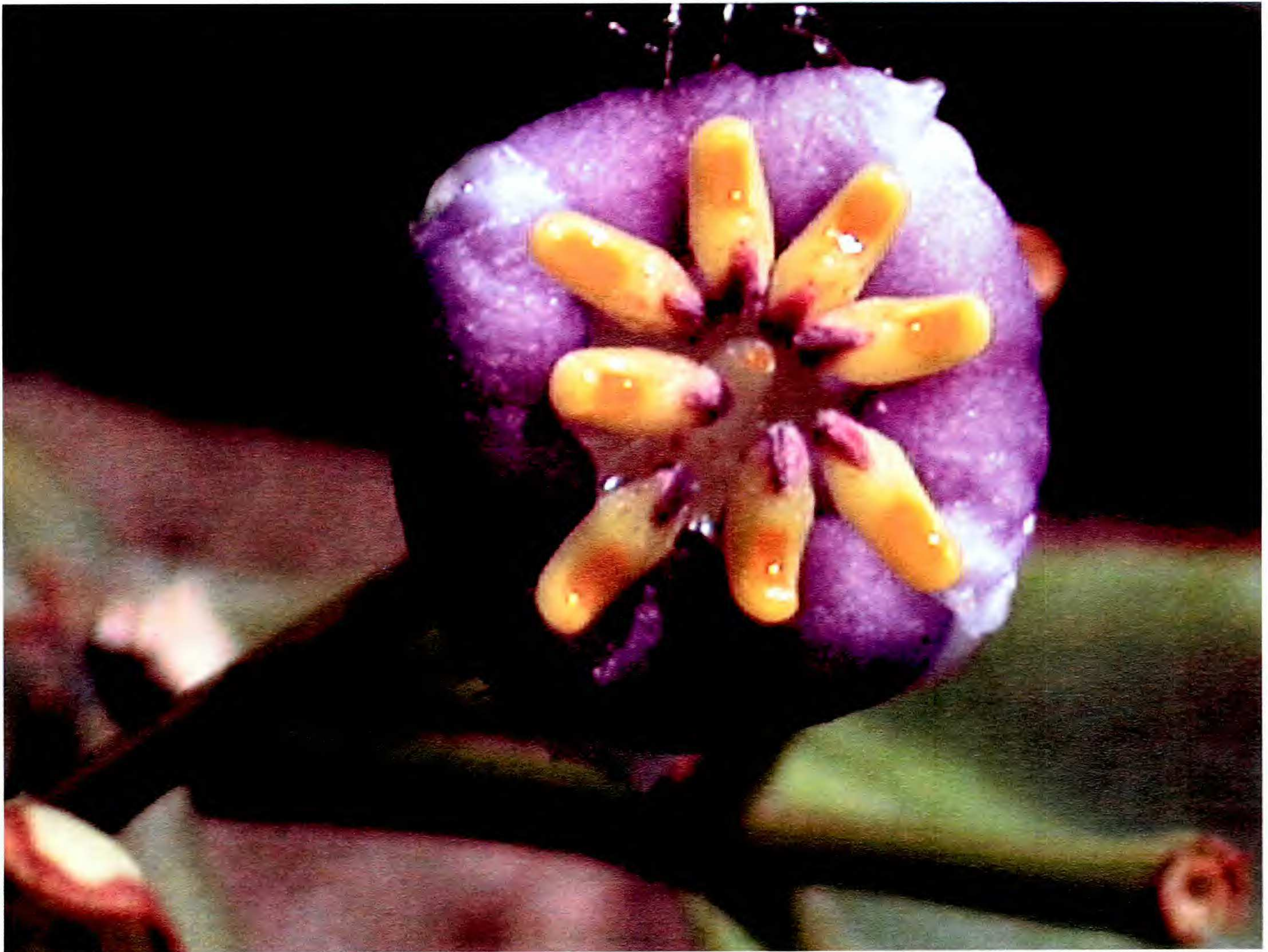


Figure 1. Flower of *Memecylon amshoffiae* Jacques-Félix (ca. 10 times natural size) showing the enlarged and elongated anther connectives, each bearing a dorsal gland. The four separate petals are recurved at anthesis and the bases overlap one another, the corolla thus falsely appearing sympetalous. Photograph by RDS on left bank of Nyong River ca. 10 km southwest of Eséka, South province, Cameroon, corresponding to the specimen Stone & Ghogue 2529 (CAS, YA).

Bremekamp (the type species of the section) along with *M. amshoffiae* Jacques-Félix, *M. mouririoides* Jacques-Félix, *M. occultum* Jacques-Félix, and *M. ramosum* Jacques-Félix.

Recent phylogenetic analyses of nuclear genomic sequences have demonstrated that *Memecylon amshoffiae*, a riparian forest tree from Cameroon's South province, is quite divergent from *M. lateriflorum* and other members of section *Mouririoidea* (Stone, 2004 & unpublished data). Furthermore, although Jacques-Félix (1979) described the ovary of *M. amshoffiae* as 4-loculed, this is clearly incorrect: the ovary is unilocular, based on new dissections by the first author of flower buds from an isotype specimen (Leeuwenberg 5142, UC) and another recent collection from the type region (Stone & Ghogue 2529, CAS). *Memecylon amshoffiae* also has elongated anther connectives, such that the gland is positioned on the dorsal surface (Fig. 1), while in *M. lateriflorum* and other members of section *Mouririoidea* the connectives are scarcely or not prolonged, the gland thus positioned laterally on the face opposite the anther sacs (Jacques-Félix, 1979, 1983a). These morphologi-

cal and molecular results provide strong indication that *M. amshoffiae* must be excluded from the circumscription of section *Mouririoidea*. The current infrageneric placement of *M. amshoffiae* is discussed following the description of a new, closely related species from southeastern Gabon.

Memecylon batekeanum R. D. Stone & G. M. Walters, sp. nov. TYPE: Gabon. Haut Ogooué: buffer zone of Batéké Plateaux National Park, embarquière to Projet Protection des Gorilles, 1°58'17"S, 14°00'34"E, 400 m, 25 Nov. 2001. G. Walters, A. Bradley, G. Nang-Essouma & A. Mbaniboua 967 (holotype, MO; isotypes, CAS, LBV, WAG). Figure 2.

Haec species *M. amshoffiae* Jacques-Félix affinis, sed ab eo habitu fruticoso, ramulis juvenibus quadrangulari-alatis, inflorescentia breviora pauciflora semel ramificante atque calyce calyptriformi differt.

Evergreen shrub less than 1 m high; young branchlets quadrangular and narrowly alate (this condition evidently not persisting below the first

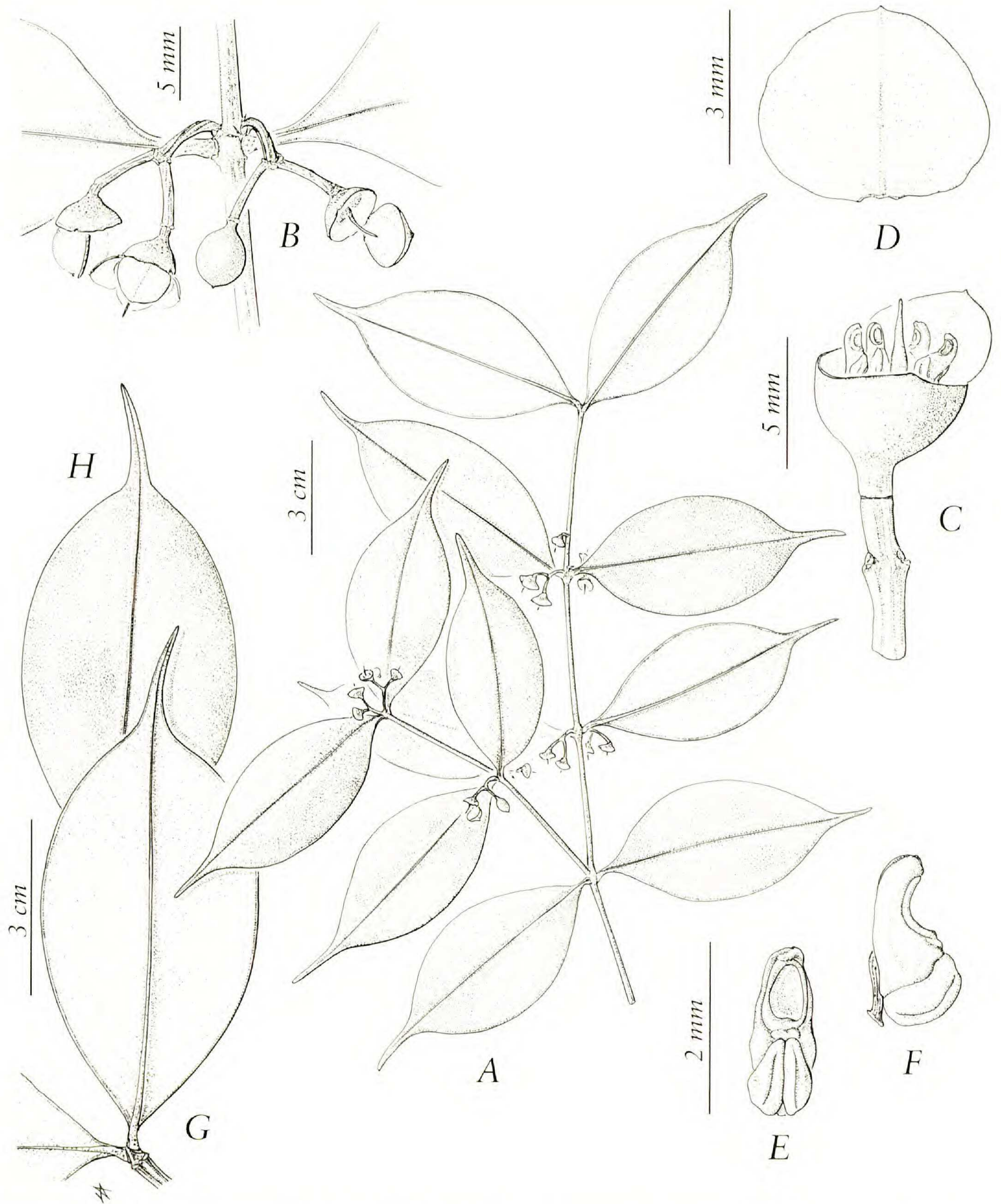


Figure 2. *Memecylon batekeanum* R. D. Stone & G. M. Walters. —A. Flowering branch. —B. Inflorescence with calytrate calyx. —C. Flower with three petals removed. —D. Petal. —E. Anther, frontal view. —F. Anther, lateral view. —G. Leaf, abaxial surface. —H. Leaf, adaxial surface. Drawn from the holotype Walters *et al.* 967 (MO).

internode); internodes mostly 3–5 cm long. Leaves thinly coriaceous, dark green and somewhat shining above, dull and much paler below (drying brown); petioles 3–4 mm long; blades elliptic, (5.6–)6.5–8.0 (–8.5) × (2.9–)3.1–3.8(–4.1) cm, cuneate at base, rounded and then abruptly acuminate at the apex; acumen slender, mostly 1.2–1.6 cm long, often curved; mid-nerve finely impressed on the upper

surface, prominent on the lower surface; transverse nerves scarcely visible, faintly impressed on the upper surface in dried material, obscure on the lower surface, 12 to 14 pairs oriented at slightly oblique angles relative to the mid-nerve and closely spaced (2–5 mm) relative to one another; lateral nerves situated < 1 mm from the margin, scarcely visible. Cymes 1–1.5 cm long, geminate or solitary in the axils

(rarely at older nodes below the current leaves or at bracteolate nodes alternating with those bearing fully developed leaves), 1- to 2(to 3)-flowered, with terminal flower usually absent; peduncles 2–5 mm long; primary axes (2.5–)3–5 mm long; secondary axes lacking; bracts deciduous, not seen. Flowers with pedicels 0.5–1 mm long; hypantho-calyx with thick texture, subglobose in bud, ca. 4.5 mm long, 3.5–4 mm diam., apex conical and apiculate; calyx in bud entirely covering the corolla, calyptrate and falling off neatly (or remaining attached to one side) at anthesis leaving a truncate margin (the margin occasionally provided with 4 V-shaped sinuses ca. 1 mm deep); hypantho-calyx at anthesis broadly campanulate, 2.5–3 × 5 mm; petals lilac, ca. 4–4.5 × 4.5–5 mm, broadly ovate to suborbicular, apiculate, the mid-nerve keeled on the abaxial surface; anthers 2 × 1 mm; connective yellow, broadly saddle-shaped by the gland that occupies nearly the entire length on the dorsal side; filaments ca. 2.5 mm long; epigynous chamber with 8 parietal partitions and 8 interstitial lines; style robust, 4 mm long; ovary unilocular; ovules 12. Fruits not seen.

The epithet *batekeanum* refers to the type locality and to the Batéké people who live in this region. The rolling hills of the Batéké Plateaux, which extend well into the adjacent Republic of Congo, are formed of Kalahari sands, which are the deepest sand deposits in the world (Haddon et al., 2000). Annual rainfall does not exceed 1600 mm and occurs in two seasons of October to December and February to May. Vegetation cover is a mosaic of grassland maintained by anthropogenic fire and forest confined to the moist river valleys (Koechlin, 1961). The savanna is heavily populated by *Hymenocardia acida* Tulasne (Euphorbiaceae) and *Annona senegalensis* Persoon (Annonaceae), and is often dominated by *Ctenium newtonii* Hackel (Poaceae) and other graminoid and Cyperaceae species including *Schizachyrium thollonii* (Franchet) Stapf (Poaceae), *Loudetia simplex* (Nees) C. E. Hubbard (Poaceae), and *Rhynchospora candida* (Nees) C. B. Clarke (Cyperaceae). The adjacent forest contains many common species of the Guineo-Congolian region (sensu Monod, 1957; White, 1983), including *Anonidium mannii* (Oliver) Engler & Diels (Annonaceae), *Uapaca paludosa* Aubréville & Leandri (Euphorbiaceae), *Santiria trimera* (Oliver) Aubréville (Burseraceae), and *Pentaclethra macrophylla* Benth (Fabaceae). Other Melastomataceae species occurring in the understory include *Memecylon* aff. *sitanum* Jacques-Félix, *M. occultum*, *Spathandra blakeoides* (G. Don) Jacques-Félix, and the riverine *Dichaetanthera strigosa* (Cogniaux) Jacques-Félix. The sandy substrate and fire regime do not seem to

contribute to plant endemism in the area, as psammophytes are abundant and pyrophytes are nearly absent in the flora. The Guineo-Congolian forest species present in the area are evidently shared with a larger forested block to the north and west; however, there are minor floristic influences from the Sudano-Zambesian region (Walters et al., 2006).

Although *Memecylon batekeanum* is common at its type locality, the species is currently known from a single flowering collection. It may well be a localized endemic with an Area of Occupancy (AO) of perhaps no more than 10 km². It is furthermore found within the buffer zone of the Batéké Plateaux National Park, where the riverine forest is most likely kept in check by anthropogenic fire. This combination of factors suggests a provisional conservation status of Vulnerable (VU D2), as defined by the IUCN (2001).

The new species closely resembles *Memecylon amshoffiae* of Cameroon, especially in its leaf morphology and texture, color of the leaves on drying, axillary inflorescences, and size and texture of the hypantho-calyx. The petals and anthers of the two taxa are identical in both morphology and color; even their ecology is similar (riverine forest). In addition, they are resolved as sister taxa in molecular phylogenetic trees, and they share an unusual, 82-base repeat in the ITS2 region of nuclear ribosomal DNA (Stone, 2004).

In both species, the corolla in bud is entirely concealed by the calyx (an unusual feature in *Memecylon*). However, whereas in *M. amshoffiae* the calyx separates at anthesis into four valvate lobes with intervening sinuses 2–3 mm deep, in *M. batekeanum* the calyx is calyptrate and falls off neatly leaving a truncate margin (occasionally with 4 shallow indentations). The new species also differs in its shrubby habit, quadrangular-alate young branchlets, and shorter, fewer-flowered cymes (1–1.5 cm long and mostly 1- to 2-flowered vs. generally 2–3.5 cm long and 3- to 7-flowered in *M. amshoffiae*). The ranges in length of the peduncle, the primary inflorescence axes, and the pedicels overlap in the two species, although in *M. batekeanum* these measurements are usually less. Furthermore, the cymes of *M. amshoffiae* often have secondary branches, whereas in *M. batekeanum* these are evidently absent. Other subtle differences are found in the leaf dimensions; in *M. batekeanum* the blades are somewhat shorter relative to their width (mostly less than 2.5 times longer than wide vs. greater than 2.5 times longer than wide in *M. amshoffiae*), the apex is more abruptly acuminate, and the acumen is more slender. In addition, the known populations of the two species are isolated from each other by a distance of about 700 kilometers.

Together, *Memecylon amshoffiae* and *M. batekeanum* appear closely related to yet another riparian

species, *M. diluviorum* Exell, which ranges from Angola (Cabinda, the type region) to Gabon (see Jacques-Félix, 1983b, and recent collections at CAS and MO). However, *M. diluviorum* notably differs from the *M. amshoffiae*–*M. batekeanum* species pair in that the corolla in bud is well exposed by the truncate calyx, which at anthesis becomes evenly parted into four segments with intervening, V-shaped sinuses ca. 1.5 mm deep. Jacques-Félix (1983b) previously treated *M. diluviorum* in section *Polyanthema*, and both *M. amshoffiae* and *M. batekeanum* are provisionally placed in this section (Stone, 2004).

An additional Gabonese collection that is obviously allied with *Memecylon amshoffiae* and *M. batekeanum* was made in Ogooué-Maritime (or Nyanga?) province, 32 km north of Igotchi-Mouenda (12 May 1997, G. McPherson 16950, CAS). This specimen, taken from a tree 7 m high, is distinguished mainly by its calyx, which ruptures irregularly and eventually falls off leaving a very thick and sinuately 4-lobed margin (vs. valvately 4-lobed in *M. amshoffiae*, calyptrate in *M. batekeanum*). *McPherson 16950* may represent yet another new (albeit closely related) species, which would not be very surprising given the prevalence of regional and local endemism in African *Memecylon*.

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